

PARTIALLY CAPTURED ORIENTED INTERCONNECTIONS FOR BGA PACKAGES AND  
A METHOD OF FORMING THE INTERCONNECTIONS

ABSTRACT OF THE DISCLOSURE

A Ball Grid Array package having an increased fatigue life  
5 and improved conductive pad adhesion strength, as well as  
providing sufficient wiring space within the package, is  
disclosed. In particular, solder joints having a combination of  
mask-defined and pad-defined solder joint profiles are formed  
using a mask having non-circular elongated openings. The non-  
10 circular elongated openings of the mask have a major axis and a  
minor axis, such that the dimension of the openings along the  
major axis is greater than the diameter of the conductive pads,  
and the dimension of the openings along the minor axis is less  
than the diameter of the conductive pads. In addition, the major  
15 axis of the openings within the mask are selectively oriented in  
the direction of highest stress for each solder joint within the  
package, while providing ample wiring space therein.